



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,630	09/18/2001	Jane Lam	373722001200	1772
25226	7590	11/05/2003	EXAMINER	
MORRISON & FOERSTER LLP			KIANNI, KAVEH C	
755 PAGE MILL RD			ART UNIT	
PALO ALTO, CA 94304-1018			PAPER NUMBER	

2877

DATE MAILED: 11/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

qm

Office Action Summary	Application No. 09/955,630	Applicant(s) LAM ET AL.	
	Examiner Kevin C Kianni	Art Unit 2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 19-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,11,14,15,17,23 and 24 is/are rejected.
- 7) ☒ Claim(s) 2-4,6-10,12,13,16 and 18 is/are objected to.
- 8) ☒ Claim(s) 19-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 . 6) ☐ Other: _____

DETAILED ACTION

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-18 and 23-24, drawn to phased array having proximal and distal waveguides in either sides of proximal and distal slabs, classified in class 385, subclass 24.
 - II. Claims 19-22, drawn to transmitting at least one of the signals across at least one distal waveguide, classified in class 385, subclass 17.
2. Inventions I (claims 1-18 and 23-24) and II (claims 19-22) are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case invention II can be used as a WDM in a router having add/drop capabilities for adding or canceling specified signals and routing them to output waveguides/device compared to invention I in which only predetermined signals can be sent through the waveguide (s) without WDM functions or wavelength add/drop capabilities. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
3. During a telephone conversation with Mr. Chris Ide on October 14, 2003 a provisional election was made without traverse to prosecute the invention of Group I,

claims 1-18 and 23-24. Affirmation of this election must be made by applicant in replying to this Office action. Claims 19-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

5. Claim 23 and 24 are objected to because of the following informalities:

a) in claim 23, a semicolon at the end of line 6, page 23, is missing. Appropriate correction is required.

b) the article 'an' in the 5th line of claim 24, page 23, should be rephrased as 'a'. Appropriate correction is required.

c) the limitation terminologies 'said input and output ends' (in the 5th line of claim 23 and in the 6th line of claim 24) are inconsistent with the limitation terminologies 'proximal end and distal end' (in the 4th line of claim 23 and in the 5th line of claim 24). Although it is understood from the specification (page 10, 4th parag.) that applicant refers to the proximal end as an input and distal end as an output when the optical device is used as a signal multiplexer, nevertheless, the aforementioned phrases in the claims need to be made consistent with each other. Appropriate correction is required.

Allowable Subject Matter

6. Claims 2-4, 6-10, 12-13, 16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

- The examiner notes that the claims which their limitations are based on having gap(s) with certain/specific degree/range of angle(s) with respect to proximal/distal waveguides are given allowable weight by the examiner because the range of gap angle(s) and the way they are fashioned in the waveguides are significant in controlling of insertion loss in AWG art; furthermore, Hibino et al. does not provide any/convincing motivation to make obvious any reason for changing the angle(s) of the gap.

Claim 2 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious said gap of each of said distal waveguides varies between said plurality of distal waveguides in combination with the rest of the limitations of the base claim. Claims 3-4 depend to claim 2 and therefore they are also allowable.

Claim 6 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said angle equals is measured between a face of said distal waveguide adjacent to said gap and a side of said distal waveguide, and said angle is between 70 and 80 degrees in combination with the rest of the limitations of the base claim. Claim 7 depends to claim 6 and therefore it is also allowable.

Claim 8 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein at least one of said gaps forms an angle with an axis orthogonal to a plane of said distal waveguide in combination with the rest of the limitations of the base claim.

Claim 9 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein said angle equals is measured between a face of said distal waveguide adjacent to said gap and said axis, and said angle is between 70 and 90 degrees in combination with the rest of the limitations of the base claim. Claim 10 depends to claim 9 and therefore it is also allowable.

Claim 12 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious wherein at least one of said gaps extends only partially through one of said distal waveguides in combination with the rest of the limitations of the base claim.

Claim 13 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious , wherein at least one of said distal waveguides having said gap includes a first portion and a second portion on either side of said gap, and wherein said first and said second portions are misaligned by an offset distance in combination with the rest of the limitations of the base claim.

Claim 16 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious , wherein said gap material comprises an offset section of distal waveguide in combination with the rest of the limitations of the base claim.

Claim 18 is allowable because the prior art of record, taken alone or in combination, fails to disclose or render obvious , at least one gap between in at least one of said plurality of proximal waveguides, wherein said gap is located between said first and second ends of said distal waveguide in combination with the rest of the limitations of the base claim.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 5, 11, 14-15, 17 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hibino et al. (US 6,229,938 B1).

Regarding claim 1, Hibino teaches an optical device (shown at least in fig17a-b) comprising a plurality of signals each signal having a predetermined wavelength different from the remaining signals (see fig. 17 a-b, items $\lambda_1 \dots \lambda_n$; see col. 7, lines 56-62 and col. 1, lines 10-33), the optical device comprising:

an array waveguide grating (AWG) 73 having a proximal end and a distal end (shown at least in fig. 17a, item AWG 73 with proximal and distal ends), said AWG 73 comprising a plurality of waveguides extending between said proximal and distal ends (fig. 17a, items 74, 77 and 75), each said waveguide having a predetermined length different from another waveguide (shown in fig. 17a, items waveguides 74, 77 and 75 having waveguides each with different lengths; see also col. 1, lines 43-53); at least one proximal waveguide 74 having a first end and a second end (see fig. 17a, item 74); a proximal slab waveguide 76a between said proximal end of said AWG and said second end of said proximal waveguide 74 (see fig. 17a, item 76a); a plurality of distal waveguides 75 each having a first end and a second end (see figure 17a, item 75), at least one of said plurality of distal waveguides 75 includes at least one gap 81a between said first and second ends (see fig. 17a-b, gap(s) 81a,b; wherein the grooves formed between the first and second ends of distal waveguide 75 through dicing saw machining, see also col. 10, lines 5-31); and a distal slab waveguide 76b between said distal end of said AWG and said second end of said distal waveguide 75 (shown in fig. 17a, item 76b).

However, Hibino does not explicitly/specifically teach wherein the above optical device, in preamble, is for controlling insertion loss of wavelength-division multiplexed signals and that the above AWG is a phased array. Nevertheless, Hibino states that through insertion of external filters in output portion of AWG enables wavelength control (col. 2, line 65-col. 3, line 4) that is achieved by creation of (gaps grooves) across the AWG and inserting the filters thereon (see col. 10, lines) and forming the

groove(s) at an angle to prevent reflection (see col. 10, lines 31-34) thereby controlling wavelengths and improving cross-talk characteristic (see col. 9, lines 47). It is well known to those of ordinary skill in the art that wavelength control and forming angled gap(s)/groove(s) for purpose of reducing back reflection and further improving cross-talk in WDM is known as controlling insertion loss of wavelength-division multiplexed signals; and, furthermore, it is well known to those of ordinary skill in the art that an array waveguide grating (AWG) in WDM having angled array waveguide such as shown in fig. 17a, is known as phased array, since such an optical device would improve the cross-talk characteristic would require lower costs and small size and a small number of fiber routing operation (see col. 2, lines 37-54).

Regarding claims 5, 11, 14-15 and 17, Hibino further teaches wherein at least one of said gaps forms an angle with said distal waveguide in a plane of the distal waveguide (see fig. 17, item gap/groove 81a forms an 8° angle with the plane the distal waveguide 75); wherein at least one of said distal waveguides includes more than one of said gaps (see fig. 17a-b, item gap 81b); wherein at least one of said distal waveguides having said gap includes a gap material placed within said gap (see fig. 17b, item 80a); wherein a width of said gap having said gap material is greater than a width of said gap material (see fig. 17b, item 80a); wherein said optical device is a planar lightwave circuit (col. 2, lines 49-50);

Regarding claim 23, Hibino teaches an optical device (shown at least in fig 17a-b) comprising a plurality of signals each signal having a predetermined wavelength different from the remaining signals (see fig. 17 a-b, items $\lambda_1 \dots \lambda_n$; also see col. 7, lines 56-62 and col. 1, lines 10-33), the optical device comprising:

an array waveguide grating (AWG) 73 having a proximal end and a distal end (shown at least in fig. 17a, item AWG 73 with proximal and distal ends), said AWG 73 comprising a plurality of waveguides extending between said proximal and distal ends (fig. 17a, items 74, 77 and 75), each said waveguide having a predetermined length different from another waveguide (shown in fig. 17a, items waveguides 74, 77 and 75 having waveguides each with different lengths; see also col. 1, lines 43-53); at least one proximal waveguide 75 having a first end and a second end (see fig. 17a, item 75); at least one of said proximal waveguides includes at least one gap 81a between said first and second ends (see fig. 17b, item 81a); a proximal slab waveguide 76a between said proximal end of said AWG and said second end of said proximal waveguide 75 (see fig. 17a, item 76b); a plurality of distal waveguides 74 each having a first end and a second end (see fig. 17, item 74); and a distal slab waveguide 76a between said distal end of said AWG and said second end of said distal waveguide 74 (see fig. 17a, item 76a). Regarding Hibino's teachings of the limitations 'controlling insertion loss' and 'phased array' the arguments presented in rejection of claim 1 is analogous in rejection of claim 23.

Regarding claim 24, Hibino teaches an optical device (shown at least in fig 17a-b) comprising a plurality of signals each signal having a predetermined wavelength different from the remaining signals (see fig. 17 a-b, items $\lambda_1 \dots \lambda_n$; also see col. 7, lines 56-62 and col. 1, lines 10-33), the optical device comprising:
an array waveguide grating (AWG) 73 having a proximal end and a distal end (shown at least in fig. 17a, item AWG 73 with proximal and distal ends), said AWG 73 comprising a plurality of waveguides extending between said proximal and distal ends (fig. 17a, items 74, 77 and 75), each said waveguide having a predetermined length different from another waveguide (shown in fig. 17a, items waveguides 74, 77 and 75 having waveguides each with different lengths; see also col. 1, lines 43-53); at least one proximal waveguide 75 having a first end and a second end (see fig. 17a, item 75); a proximal slab waveguide 76a between said proximal end of said AWG and said second end of said proximal waveguide 75 (see fig. 17a, item 76b); a plurality of distal waveguides 74 each having a first end and a second end (see fig. 17, item 74); and a distal slab waveguide 76a between said distal end of said AWG and said second end of said distal waveguide 74 (see fig. 17a, item 76a).

However, Hibino does not explicitly/specifically teach wherein at least one means for controlling insertion loss of the signal transmitted through either said distal and/or proximal waveguide, said means for controlling insertion loss located between said first and second ends of either said distal and/or proximal waveguide, and that the above AWG is a phased array. Nevertheless, Hibino states that through insertion of external filters in output portion of AWG enables wavelength control (col. 2, line 65-col. 3, line 4)

that is achieved by creation of (gaps/grooves) across the AWG and inserting the filters thereon (see col. 10, lines) and forming the groove(s) at an angle to prevent reflection (see col. 10, lines 31-34) thereby controlling wavelengths and improving cross-talk characteristic (see col. 9, lines 47). Furthermore, Hibino teaches that the gap(s) is located between said first and second ends of distal/proximal waveguide (see fig. 17b, item 81a/b). It is well known to those of ordinary skill in the art that gap(s)/groove(s) for purpose of reducing back reflection, wavelength control and improving cross-talk in WDM is known as control means for controlling insertion loss of wavelength-division multiplexed signals, since such an optical device would improve the cross-talk characteristic would require lower costs and small size and a small number of fiber routing operation (see col. 2, lines 37-54). Regarding Hibino's teachings of the limitations 'phased array' the arguments presented in rejection of claim 1 is analogous in rejection of claim 24.

Citation of Relevant Prior Art

9. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Yoneda et al. JP02001013337A teaches controlling of input signal loss through having a gap/groove in the array waveguide.

Uetsuka et al. 6549696 teaches controlling of input signal loss through having a gap/groove in the array waveguide.

Application/Control Number: 09/955,630
Art Unit: 2877

Page 12

Janson Van Doorn et al. teaches phased array as (AWG)
Nakajima et al. 6,404,946 teaches AWG with gap in distal/proximal waveguides
Albrecht et al. 6591034 teaches AWG having individual gap/space as strips in each individual waveguide of the AWG in proximal/distal waveguides.

These references are cited herein to show the relevance of the apparatus/methods taught within these references as prior art.

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Cyrus Kianni whose telephone number is (703) 308-1216. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (703) 308-4881.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

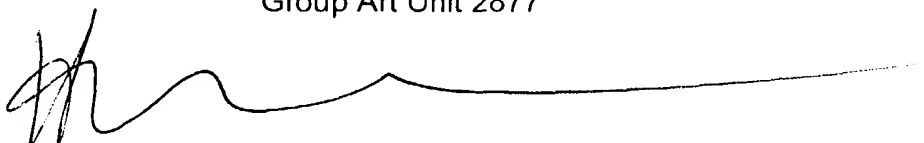
(703) 872-9306 (for formal communications intended for entry)

or:

Hand delivered responses should be brought to Crystal Plaza 4, 2021 South Clark Place, Arlington, VA., Fourth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956.

Kevin Cyrus Kianni
Patent Examiner
Group Art Unit 2877

A handwritten signature in black ink, appearing to be 'K. Kianni', followed by a long horizontal line.